



1.0 INTRODUCTION

The Carlsbad Residential Storm Water Education Program (Carlsbad RSWEP) is intended to assist the City in the development and implementation of an effective storm water education and outreach program for the targeted audiences. The City has identified an educational outreach approach, including messages and delivery formats, that will effectively and accurately relay the required pollution prevention and best management practice implementation opportunities. The overall objective of the program is to increase awareness and knowledge, and change the behaviors that contribute to storm water pollution. This program will further provide guidance to City staff in determining priority residential education areas and activities and measurably implement outreach strategies.

This goal and its supporting objectives and activities described in this Carlsbad RSWEP comply with the Municipal Stormwater Permit - Order No. R9-2007-0001, NPDES No. CAS0108758 (Permit). The City has also collaborated with the Copermittees to develop a Regional Residential Education Program (Regional REP). While the Regional REP will be coordinated extensively among the Copermittees, it is not meant to replace or supplant the jurisdictional and watershed programs.

There are several benefits to implementing an enhanced jurisdictional program that compliments the Regional REP to target residential sources. First, it will encourage the development of consistent messages throughout the City and Region. Messages will incorporate the familiar themes of the City's Environmental Programs public outreach efforts, which include messages about related storm water issues such as recycling, household hazardous water, water conservation, and trash management. Second, working together with other Copermittees will enable the City to better leverage resources and utilize economies of scale. In addition to using the City's current storm water and Environmental Programs branding, Carlsbad will be able to access resources supporting the "Think Blue" outreach campaign, including familiarity, advertising, and strategic marketing plan. Finally, storm water and urban runoff pollution frequently cross jurisdictional boundaries, making collaborative approaches an absolute necessity.

The Carlsbad RSWEP objectives were developed based on recommendations from the Regional REP strategy, evaluation of existing education programs, and requirements of the Permit:

- Maintain a consistent image, message, and brand;
- Use positive messages to knowledge and awareness, and ultimately in identified target audiences;
- Develop community partnerships to leverage resources;

- Develop assessment strategies for program effectiveness; and
- Accurately link pollutants with pollutant generating activities and emphasize BMP education and implementation.

2.0 SOURCE CHARACTERIZATION

The City encompasses approximately 42 square miles, with an estimated population of 101,337 residents (January 1, 2007, California Department of Finance). The residential community has a potential to contribute to water quality degradation. The focus of the City's pollution prevention strategy is a proactive outreach and education program that utilizes public presentations, fact sheets, direct mailers, brochures, complaint response, and other media to increase knowledge and awareness of pollution prevention and storm water BMPs.

Because Carlsbad is a coastal city with several areas discharging to 303(d) impaired waterbodies, all residential sources and associated activities are considered high threat to water quality. The City will continuously provide information on the identified high threat to water quality residential sources and activities as identified in Section 8.2.1 and focus education efforts towards residential activities that have the greatest potential to contribute to storm water pollution. All efforts will be reported in JURMP Annual Reports.

During the Permit cycle, the Carlsbad RSWEP will focus efforts on high priority pollutants that are prevalent within the Carlsbad Hydrologic Unit (HU) and region. Water quality monitoring data and source characterization studies have provided the City with useful information in determining jurisdiction residential sources of storm water pollution and constituents of concern.

2.1. Jurisdictional and Regional Constituents of Concern

The City, along with the Copermittees, has identified pollutants of concern, or those pollutants which have the most impact on overall water quality. The City's program will center around the detection and elimination of these pollutants of concern, and the development of educational programs to redirect focus towards helping the residential community understand pollutant sources, control, and impacts. The following constituents of concern listed in Table 1 were determined to be the primary and secondary pollutants for the City of Carlsbad and of concern to the San Diego region.

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Table 1: City of Carlsbad and San Diego County Constituents of Concern

Constituent	Carlsbad Primary	Carlsbad Secondary	Regional	Discussion/Sources
Sediment	X		X	Sediment is a common component of storm water, and can be a pollutant. Sediment can be detrimental to aquatic life by interfering with photosynthesis, respiration, growth, reproduction, and oxygen exchange in water bodies. Erosion and construction sites are common sources of sediment.
Nutrients		X	X	Nutrients, including nitrogen and phosphorous, are the major plant nutrients used for fertilizing landscapes and are often found in storm water.
Bacteria	X		X	Bacteria and viruses are common contaminants of storm water. For the MS4, sources of these contaminants include pet waste, food waste, encampments, and sanitary sewer overflows. High levels of indicator bacteria in storm water have led to the closure of beaches, lakes, and rivers to contact recreation such as swimming.
Oil and Grease		X		Oil and grease includes a wide array of hydrocarbon compounds. Sources of oil and grease include leakage, spills, cleaning and sloughing associated with vehicle and equipment engines and suspensions, leaking and breaks in hydraulic systems, restaurants, and waste oil disposal.
Pesticides		X	X	Pesticides (including herbicides, fungicides, rodenticides, and insecticides) have been repeatedly detected in storm water at toxic levels, even when pesticides have been applied in accordance with label instructions.
Trash		X	X	Typically resulting from urban areas, trash may harbor bacteria, viruses, vectors, and depress the dissolved oxygen levels in streams, lakes, and estuaries sometimes causing fish kills.

2.2. Pollutant-generating Sources and Activities

One of the most important tasks is to identify pollutant-generating sources and activities and require the implementation of appropriate BMPs to eliminate those sources. The identified constituents of concern have a variety of sources; however for the purposes of the Carlsbad RSWEP, the City has identified sources from the residential community. This listing is not meant to be comprehensive, but strategic in focusing efforts and resources towards those activities that have the greatest potential to contribute to storm water pollution. Table 2 outlines the residential sources and activities associated with high priority pollutants in the City.

Table 2. Pollutant Generating Sources and Activities

Sources of Pollution	Priority Constituents					Pollutant Generating Activities
	Bacteria	Nutrients	Pesticides	Sediments	Trash	
Pet Waste	X	X				<ul style="list-style-type: none"> Leaving pet waste in yard, street or sidewalk Improper disposal of pet waste
Cleaning of Impervious Surfaces	X	X	X	X	X	<ul style="list-style-type: none"> Discharge of wash water to MS4 Use of harmful chemicals to clean surfaces Wash water picks up other pollutants in the drainage path
Oil and grease	X				X	<ul style="list-style-type: none"> Improper disposal of used oil and cooking grease Vehicles leaking on streets and in drive ways Residential car washing
Irrigation Run-off	X	X		X	X	<ul style="list-style-type: none"> Over-irrigation Improper irrigation and system maintenance
Lawn and Garden Care	X	X	X	X	X	<ul style="list-style-type: none"> Fertilizer Use Improper disposal of garden waste Pest Management Landscaping
Trash/Litter	X				X	<ul style="list-style-type: none"> Improper waste disposal Illegal Dumping

2.3. Target Audiences

The U.S. Census Bureau estimates that the Carlsbad population is 11.3% Hispanic and 88.7% non-Hispanic. Non-Hispanic persons include Caucasians, African Americans, American Indians, Native Hawaiians, Asians, and persons of a multitude of races, ethnicities, and cultures. The U.S. Census Bureau estimates that the median household income in the City of Carlsbad is \$71,151. In addition, in 2000 only 7.5% of Carlsbad's population was living below the poverty level, compared to 13.2% statewide. In developing outreach programs, the City will emphasize the importance identifying high-risk behaviors (illegal dumping, improper HHW storage and disposal, etc.) and educate targeted audiences about "allowable" behaviors and discharges (residential car washing, irrigation, etc.) and associated BMPs. The residential target audiences have been preliminarily divided into two general categories.

1. General Target Audience

- English speaking residents: Although several languages are spoken by Carlsbad residents, over 83 % of the residents speak "English only" at home.
- Homeowners: With nearly 68% of the Carlsbad residents living in owner occupied housing, this audience is a major demographic for the Carlsbad RSWEF.
- School-age children: Approximately 19% of the City's population is school age (5 to 19 years old). Outreach efforts for school children will be addressed at the local and watershed levels. The most effective method to reach across jurisdictional boundaries will be to work on broad, collaborative efforts. Existing programs will be reviewed to identify effective ways to incorporate storm water protection messages and information for school children. The first phase will focus on identifying existing community

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programs, library or community displays, and community events that can incorporate storm water information. The Cities will identify opportunities for school programs by organizing a calendar of events, reviewing school curriculums, and discussing outreach programs with environmental educators. Materials and resources for children will be researched and evaluated to determine if they are consistent with the objectives or the Carlsbad RSWEP and the needs of the target audience.

2. Underserved Target Audience: Spanish speaking communities and Low Socio-Economic Status (SES) communities have been traditionally underserved with respect to outreach. Educational programs will emphasize the importance of conducting outreach to the communities comprising the underserved target audiences.

- Spanish speaking communities: Nearly 17% of Carlsbad residents speak a language other than English with the primary other language being Spanish. The Carlsbad RSWEP will focus on “Spanish only” speakers as well as “English as a Second Language” speakers and learners. The city will target those high risk behaviors and activities more conducive to translation into the Spanish language.
- Low Socio-Economic Status: Socioeconomic status is based on family income, parental education level, parental occupation, and social status in the community (such as contacts within the community, group associations, and the community's perception of the family). Individuals with low SES may have a higher potential to contribute to storm water pollution because messages may be too complicated or confusing.

In addition, some messages will resonate more with the underserved communities. For example, research indicates that the motivating factors in the Hispanic communities are 1) Health & commitment to family; 2) Children; and 3) Finances. These will be similar in the Low SES communities. Therefore, some messages and delivery methods will be tailored specifically to the Underserved Target Audience.

The North County Storm Water Programs conducted a public opinion telephone survey in 2004 in which questions were addressed to survey respondents about their knowledge and awareness of watersheds and water pollution issues. Whereas behavior and attitude components of the survey demonstrated a recognizable level of consciousness about water pollution issues, that same sensitivity was less evident when knowledge and awareness of water pollution and watershed issues were tested. This knowledge is especially lacking in the subgrouping of newer, younger, lesser educated, Spanish speaking, and renter residents. The consistency shown by these subgroups throughout the survey represents a significant opportunity for the provision of information on a very specific, targeted basis, with considerable chance for success. It is noteworthy, however, that in the case of knowledge and awareness, Spanish language respondents fared particularly poorly. Regarding knowledge and awareness of watershed issues, these subgroups were joined on the lower knowledge/awareness scale by female residents of the watersheds, who demonstrated significantly lesser degrees of knowledge and awareness than men. Increasing knowledge and awareness that the system leads directly to local waterways will help residents to understand that urban sources of pollution have a direct effect on water quality. The awareness and knowledge of these issues are precursors to adjustments in attitudes (i.e.: increased concern for preventing this type of pollution).

3.0 TARGETED CHANGES TO AWARENESS AND BEHAVIOR

The Carlsbad RSWEP will seek to raise the awareness of residents with regards to storm water pollution, while encouraging changes to behaviors that may impact to the Carlsbad HU. The program will generally seek to educate residents on 1) The difference between storm water conveyance systems and sanitary sewer systems; 2) the connection of storm drains to local waterways; and 3) common residential sources of urban run-off. This strategy is in line with and will complement the Regional REP. Although these are general awareness concepts, research shows that many residents still do not understand that storm drains and sewer systems are completely separate. This is an important general awareness concept because the other more specific targeted awareness concepts build on this understanding.

Specific awareness concepts are listed in Table 3, along with desired behavior outcomes for each pollutant generating activity. It may not be feasible to craft messages that address each of the desired behavior changes.

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Table 3. 2007-2008 City Targets for Awareness and Behavior

Pollutant Generating Activities	Knowledge/Awareness	Examples of Desired Behavior Outcomes
<ul style="list-style-type: none"> Leaving pet waste in yard, street, or sidewalk Improper disposal of pet waste 	Pet waste left in the yard and streets may introduce solids, bacteria, and nutrients to the storm drain and/or receiving water bodies.	<ul style="list-style-type: none"> Pick up pet waste during walks. Pick up pet waste around home. Properly dispose of pet waste in trash can or bin.
<ul style="list-style-type: none"> Over-irrigation Improper irrigation and system maintenance 	Over-irrigation causes water and pollutants in its path to run into the storm drain and/or receiving water bodies.	<ul style="list-style-type: none"> Reduce over-irrigation Use irrigation controller technology to reduce the amount of over-watering Inspect and maintain irrigation system regularly
<ul style="list-style-type: none"> Fertilizer use Pest Management Landscaping Improper disposal of garden waste 	<p>Fertilizers and pesticides become pollutants that can be harmful to natural ecosystems when entering receiving water bodies.</p> <p>Soil, sediment, and yard waste can clog storm drains and/or receiving water bodies.</p>	<ul style="list-style-type: none"> Use plants that reduce the need for fertilizers (i.e.: native plants) Apply chemical fertilizers and pesticides only as needed and at the appropriate time Use organic or slow-release fertilizers Use Integrated Pest Management Store chemicals inside in a shed or storage cabinet where they are protected from rainfall Collect grass clippings and yard waste Dispose of grass clippings and yard waste in the proper containers Protect exposed soil from rain with a tarp, vegetation, and/or mulch.
<ul style="list-style-type: none"> Discharge of wash water to MS4 Use of harmful chemicals to clean surfaces Wash water picks up other pollutants in the drainage path 	When it rains, trash, dirt, and chemicals that have built up on these surface can run into the street, the storm drain, and eventually local waterways.	<ul style="list-style-type: none"> Clean driveways, walkways, and patios by sweeping instead of hosing Direct wash water to soak in to lawn or garden
<ul style="list-style-type: none"> Improper waste disposal 	Litter and debris dropped on the ground will be washed into storm drains and local water bodies.	<ul style="list-style-type: none"> Put litter and cigarette butts in trash cans or bins Keep lids closed on trash cans or bins
<ul style="list-style-type: none"> Improper disposal of used oil and cooking grease Vehicles leaking on streets and in drive ways Residential car washing 	Oil and grease do not dissolve in water. When not properly disposed of it can clog storm drains, cause sewer overflows, and be a source of bacteria in our environment.	<ul style="list-style-type: none"> Clean up spills immediately. Collect used oil and grease in containers and dispose of properly. Recycle used oil at several convenient locations in Carlsbad. Stop drips from vehicles. Check for leaks regularly and fix them promptly. Wash vehicles at commercial car washes. If you must wash vehicles at home, use minimal water and detergents.

4.0 EDUCATIONAL METHODS AND APPROACHES

A variety of methods and approaches will be utilized to implement the program objectives. The Carlsbad RSWEP objectives are to 1) Maintain a consistent image, message, and brand; 2) Use positive messages to knowledge and awareness, and ultimately in identified target audiences; 3) Develop community partnerships to leverage resources; 4) Develop assessment strategies for program effectiveness; and 5) Accurately link pollutants with pollutant generating activities and emphasize BMP education and implementation. City staff can maximize resources through the use of partnerships with businesses and business organizations, nonprofits, and other government agencies. The methods that may be utilized to implement these objectives are as follows:

- **Website**
 - The City's Environmental Programs webpage will be consistently updated with information on jurisdictional, watershed, and regional outreach and education efforts. The site will contain a link to the County's "Think Blue" website*.
 - Press releases related to storm water issues will be posted on the City's home page's news room and "City News" section with links to the City and County websites*.
 - Two "splash page" ads will be created for the front page of the City's website for water conservation and used oil.
- **Mass Media (Broadcast)**
 - For maximum impact, the City will utilize the County's "Think Blue" broadcast messages.*
- **Mass Media (Outdoor)**
 - For maximum impact, the City will utilize the County's "Think Blue" broadcast messages.*
- **Classroom Education**
 - The City will most likely continue to use a consultant to conduct classroom education about watershed, stewardship and pollution prevention.
 - Outreach materials will be provided to students and teachers.
 - Throughout the Permit cycle, Storm Water Protection Program staff will continue to participate in the "City Stuff" program, which is a partnership between the City and Junior Achievement program. The program reaches over 50, 3rd grade classrooms in Carlsbad (across district lines) and information filters home to the parents/residents. Students learn how Cities are planned, operated, and what services are offered. They also learn about important businesses in a City. Out of the six lessons taught, three of the lessons are Carlsbad specific, and one lesson is focused on City departmental programs.
- **Public/Community Relations**
 - Speakers Bureau
 - Display booths at City and community events.
 - Promotion of storm water education at the Citizens' Academy
 - Placement of articles on storm water education in other publications that reach a city audience, including the Carlsbad Business Journal and Carlsbad Magazine
 - Carlsbad Conserves Environmental Newsletter

**The City of Carlsbad will begin using San Diego County's "Think Blue" campaign once the County issues "Think Blue" materials and creates a "Think Blue" website. The date of the county's "Think Blue" campaign material launch is TBA for 2008.*

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- Community Services Guide articles
- Brochures
- Bill stuffers
- E-News
- Storm water hotline number
- Carlsbad Community Update Video
- Press Release
- **Internal City Communications**
 - Discuss the importance of City-wide storm water outreach at the Quarterly Management Meeting.
 - Department head follow-up with staff in regular staff meetings to explain the department's role in the program.
 - Posting details about the program on the intranet.
 - Information about the program in staff newsletters, including Worth Noting and the Public Works newsletter.
- **Material Distribution**
 - Advertisements featuring used oil and water conservation will be featured in the City's Community Services Guide (CSG) magazine, which goes out to every Carlsbad household (approximately 41,000 households). The first ad on water conservation was already featured in the Winter '07/Spring '08 CSG.
 - The CSG's "Think Globally, Act Neighborly" feature on the County and City storm water education program, including websites and phone numbers for more information.
 - Bill stuffer with City/County website addresses and phone numbers for storm water information
 - Storm water information and educational tips in the City's e-newsletter, which reaches more than 1,000 residents.
 - Storm water informational repositories will be set up at City facilities, including recreation, library, City Manager's Office, City Council Chambers and Faraday. Survey forms and informational brochures will be available at the facilities.
- **Partnerships**
 - The City will seek out opportunities to partner with other community organizations to help implement outreach and education programs.
- **City-wide Community Event**
 - Materials about pollution prevention and BMPS will be made available at a variety of community events including, but not limited to, Carlsbad Street Fair, Carlsbad Triathlon, Jazz in the Parks, etc.

Both traditional Social Marketing techniques and Community Based Social Marketing (CBSM) approaches will be utilized. Some methods will lend themselves more readily to developing CBSM based approaches. When implementing each of the methods, a CBSM approach will be pursued whenever feasible. Table 4 outlines methods and specific messages that will be developed by the Carlsbad RSWEP in this Permit cycle. Messages were designed to be simple and memorable.

Table 4: Methods of Outreach and Target Behaviors

Primary Target Behaviors	Potential Methods of Outreach							Potential Specific Messages
	Website	Mass Media Broadcast	Mass Media Outdoor	Public Relations	Material Distribution	Partnerships	Community Events	
Pick up pet waste and dispose of in trash bin	X	X	X	X	X	X	X	Pet waste must be picked up and disposed of properly.
Reduce over-irrigation by regularly inspecting and maintaining irrigation systems	X			X	X	X	X	The City offers free water audits for residents. Water audits can help reduce over irrigation which causes pollutants to be washed to our waterways.
Apply chemicals to lawn and garden only as needed	X	X		X	X	X	X	There are several natural alternatives and IPM opportunities that would help reduce the need for chemical applications to lawn and gardens.
Use organic or slow-release fertilizers	X	X		X	X	X	X	Slow release fertilizers reduce the amount of runoff from landscaped areas and help protect our water ways.
Collect grass clippings and dispose of them in the proper container	X				X		X	Composting is excellent way to reduce and reuse yard waste. The City offers free to low cost composting bins for residents.
Wash vehicles at commercial car washes whenever possible	X	X	X	X	X	X	X	The soap, together with dirt, metals, and oils from residential car washing can be washed your car and the street to the storm drain system.
Sweep outside areas instead of hosing them down	X		X		X			Hosing down imperious surfaces washes pollutants to the storm drain and waterways. Use dry clean up methods whenever possible.
Put litter and cigarette butts in trash cans or bins.	X			X	X	X	X	Cigarette butts are the must common pollutant found on California beaches. Dispose of cigarette butts properly.
Do not park leaking vehicles on the street.				X	X	X	X	Automotive fluids that leaks from cars onto streets is washed into storm drains, abd can flow directly to our waterways.
Dispose of used oil properly	X	X	X	X	X	X	X	Used motor is the largest single source of oil pollution in our ocean, creeks, and lagoon. The city pffers several opportunities for residents to recycle used motor oil.

5.0 RELATIONSHIP OF REGIONAL, WATERSHED, AND JURISDICTIONAL OUTREACH

The Carlsbad RSWEP is designed to meet the Permit requirements for residential education based on jurisdictional needs and issues. “Think Blue” will be utilized as the regional brand and incorporated into City distributed materials for maximum impact. In order to ensure a consistent message, the following approaches will be undertaken:

- City staff will work collaboratively with the City of San Diego to update and standardize the Think Blue brand
- A Graphics Standards Manual will be developed by the City of San Diego and adopted by the City staff for maximum impact
- City materials will contain the Web address for the regional Think Blue website
- A regional hotline number as well as a local City hotline number will be used on all City outreach materials.
- The City will incorporate links from the Environmental Programs website to the Think Blue website.
- City staff will continue to participate in the Regional Outreach Workgroup and related subcommittees.

ASSESSMENT OF CITY EDUCATION ACTIVITIES

The following approaches will be considered to assess program effectiveness:

- Review and assess existing survey data while developing new baseline survey, including but not limited to pet waste survey and oil disposal
- Consider data collected from alternate surveys with other assessment methods, including any regional surveys, statewide surveys, or surveys from other jurisdictions.
- Work cooperatively with the Copermittees on funding and conducting market research and surveys
- Conduct workshops*
- Give presentations*
- Track website hits*
- Newsletters and mailings*
- Track number of residents participating in the City’s Household Hazardous Waste program and the amount of materials collected each year.
- Develop and incorporate new or revised questions about storm water pollution into the annual Carlsbad Customer Service survey.
- Informal surveys may be conducted on the City’s website or through a City publication. Other measurement instruments may be citizen feedback cards at City facilities, as well as participant surveys for the Citizens’ Academy. Informal measures may be taken by asking residents if they have heard of the storm water program. The City may wish to use focus groups to obtain feedback.